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Climate and changes in mammal diversity during the late Pleistocene-Holocene in the Pampean Region (Argentina)

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The association of changes in mammal diversity with periods of global climatic change is suggestive of a causal relationship. Two important features in the testing of this climatic model are as follows: the timing and the pattern of the diversity changes, and the particular climatic variables examined, since different patterns of evolutionary interactions would be expected depending on different climatic variables. In order to analyse the relationship between climate change and faunal events, we need to establish a set of comparable data. To provide a finely resolved picture of both climatic and faunal events, the last 32,500-years were divided into 13 chronological units of 2,500-years each. The limit of 32,500-years was imposed by the availability of good localities with radioisotopic calibration. Climatic stability was measured in these analyses in terms of cycles per unit of time, the amount of variation in temperature per unit of time, and the magnitude of change between modal temperature of one interval less modal temperature from preceding interval. The data presented here suggest that the primary effect of climatic change is on: (1) levels of extinction (or migration) of large mammals; and (2) diversity and origination (or immigration) of small mammals.

Key words: Pleistocene, Holocene, climatic change, mammals, diversity, extinction.

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